"acquired" to such developments as the blacksmith displays. If everyone worked as blacksmiths, Prof. MacBride would differ still more from Mr. Cunningham, for the whole of development would then be termed by the former "innate" and by the latter "acquired." To Mr. Cunningham the English language is always an acquirement; to Prof. MacBride it is innate if learned in England, but acquired if learned in France.

Formal definitions of the meanings of the terms "innate" and "acquired" when applied to characters are extremely rare in biological literature—unless such terms as "germinal" and "somatic" be attempts at definition. However, Romanes made the attempt. This is what he says ("An Examination of Weismannism," p. 5): "By a congenital character is meant any individual peculiarity, whether structural or mental, with which the individual is born. By an acquired character is meant any peculiarity which the individual may subsequently develop in consequence of its own individual experience." Elsewhere (p. 214) he defines congenital (plasmogenetic) characters as "variations due to admixtures of germ-plasm in acts of sexual fertilization (and, therefore, present at birth), as distinguished from somatogenetic characters—variations which have been acquired independently of germ-plasm." Somatic characters he defines as "characters acquired by the soma (*i.e.* variations acquired after birth by the action of the environment), as distinguished from characters produced and potentially present from the first by a union of two masses of germ-plasm—plasmogenetic characters." Romanes's language may be lacking in precision, but evidently he supposed that there is something peculiarly "innate" about a "germinal" character and something peculiarly "acquired" about a "somatic" character. Unlike Prof. MacBride, he gives all these terms their ordinary or dictionary meanings—and so, I believe, do most biologists.

Dr. Ruggles Gates (NATURE, January 20, p. 663) believes I contradict myself. It is possible he has not grasped my meaning. An illustration may help. Before me are two pencils. Comparing these individuals, I find that their differences as regards length are great, but as regards colour small. Dr. Gates will agree that I am not entitled to transfer the terms by which I described the differences between the individuals to the characters wherein they differ—*i.e.* I am not entitled to call the lengths of the pencils great and their colours small. That way lies confusion of thought. Now consider two living individuals, the one an Englishman and the other a scarred negro. They differ in colour innately—they are in this respect by nature different; their germ-plasms are unlike; even if reared under exactly similar conditions of nurture they would be unlike. They differ in scars by acquirement; here they have had not unlike natures, but unlike nurtures; if reared under similar conditions they would be like. In brief, the colour difference is blastogenic, while the difference in scars is somatogenic. All this is intelligible; the words are used correctly. They are given their ordinary meanings; they are not in the least technical. But are we now entitled to transfer our descriptive terms from the differences between individuals to the characters in which they differ? Are we entitled to call skin-coloration "innate" and scars "acquired"? We are now comparing, not separate individuals, but the characters wherein they differ. In effect, we are comparing the characters of the same individual. How is skin-colour more innate and less acquired than a scar? They are both ancient products of evolution, both depend on germinal potentiality, both develop in response to some form of nurture, and both are situated in the soma.

Dr. Ruggles Gates writes: "I pointed out (NATURE, December 2, p. 440) that if his contention that all characters are both innate and acquired in exactly the same sense and degree is true, then it would follow that all variations are also of one type, while experimental biologists are universally agreed that this is not the case. At least two categories of variations are postulated . . . blastogenic and somatogenic. . . . Yet Sir Archdall Reid's only attempt to answer my criticism that the universally admitted existence of two types of variations undermines his whole position is the very weak one of quoting Darwin's tentative theory of pangenesis." But I did not quote the theory of pangenesis *against* Dr. Gates; I was merely trying to make my meaning clear. And surely the word "variation" indicates, not a character as such, but a difference between individuals. Resemblances do not necessarily exclude differences. A cleft lip is always a character in both man and rabbit; but it is a variation in the former, but not in the latter. A sixth digit resembles all other digits in that it is a product of nature and nurture; and yet (if the parent has it not) it is none the less a variation. So also a sixth digit resembles a scar in that it is a product of potentiality and stimulus; and yet it differs from the latter in that the unlikeness from the parent is innate, whereas it is acquired in the case of the scar. The resemblances between the two do not necessarily eliminate their differences. How, then, is my whole position undermined?

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Man and the Scottish Fauna.

I AM grateful to your reviewer (NATURE, December 30, 1920, p. 568) for his appreciation and for pointing out slips and misprints in my "Influence of Man on Animal Life in Scotland," but on some points of fact I would venture to disagree with other of his remarks.

Geologists will not be perturbed by his difficulty in believing in the persistence of evidence of man's presence in Scotland from times earlier than the formation of the 25-ft. beach. Sections of many places have shown that the 25-ft. beach, of estuarine material, *rests upon* the boulder clay, so that it is certainly not "clear that the land ice was grinding over all after the elevation which formed the younger 25-ft. beach." On the contrary, the evidence is that the 25-ft. beach was formed subsequent to the disappearance of the ice-fields. The relations of the 50-ft. beach are not so clear, but facts have to be explained on reasonable suppositions. And the occurrence of kitchen-middens of molluscan shells along the ridge of the 50-ft. beach in the Forth Valley is more easily accounted for on the supposition I have advocated—that they were collected while the 50-ft. beach was still a sea-margin—than on that of your reviewer, who would have the kitchen-middeners collect their shell-fish on the sea-side, now a great distance away, and thereafter scale first the 25-ft., and afterwards the 50-ft., beach before sitting down to their simple meals.

On the strength of a reference by Thomas the Rhymer, your reviewer suggests that I have erroneously omitted the green woodpecker from the list of banished Scottish animals. But both ornithologists (such as Yarrell and Newton) and etymologists (as in Wright's "Dialect Dictionary") are agreed that the word "wodewale," on which the whole value of the citation hangs, is a general word for a woodpecker, and applied to the great spotted as well as to the green woodpecker. The word has no specific significance. There seems to be, indeed,

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no evidence, past or present, that the green woodpecker has been a native of Scotland.

In naming the brown trout *Salmo trutta,* I followed the considered opinion of such an expert in fish nomenclature as Mr. C. T. Regan, of the British Museum (Natural History); my statement regarding the success of the introduction of Loch Leven trout to New Zealand did not pretend to record any *first* achieved success, and as it stands is correct; and the two "caricatures, and poor at that," specified by your reviewer happen to be reproduced from photographs of specimens mounted by skilled taxidermists, and now exhibited in the Royal Scottish Museum.

JAMES RITCHIE.

I SHOULD be sorry indeed if, in reviewing his book, I had given Dr. Ritchie the impression that I undervalued it as a contribution to prehistoric research. I did no more than express difficulty in accompanying Dr. Ritchie to the full extent of his conclusions, and surprise that, from first to last, he takes no notice of the 25-ft. beach.

I admit that I expressed myself too positively in saying that it was "*clear* that the land ice was grinding over all after the elevation which formed the younger 25-ft. beach." But many years of personal examination of the features of the Scottish seaboard have left on my mind a strong impression that some agent more powerful than sub-aerial denudation has masked or obliterated by far the greater extent of the 50-ft. beach. Such an agent may have been subsidence, glacial action, or "trail" (earth thawing and flowing after prolonged freezing, as in the "earth-glaciers" of the Rockies).

Some support to this view may be found in the late Prof. James Geikie's Munro lectures, "Antiquity of Man in Europe," 1914: "At the head of Loch Torridon well-formed terminal moraines rest directly upon the 45-50-ft. beach" (p. 273).

Prof. Geikie considered (p. 279) that the formation of that beach was followed by "partial subsidence," and continued:

"We cannot actually demonstrate that snowfields and glaciers reappeared at this stage. . . . Nevertheless, we are not without evidence suggestive of the appearance at this time of inconsiderable glaciers amongst our highest mountains. These glaciers undoubtedly existed at a later date than the glaciers that dropped their moraines on the 45-50-ft. beach. It is therefore only reasonable to infer that the high-level corrie glaciers in question were probably contemporaneous with the formation of the 25-ft. to 30-ft. beach."

The occurrence of kitchen-middens on the 50-ft. beach can scarcely be taken to prove the presence of man when the sea stood at that level. On the summit of the Fell of Barhullion in Wigtownshire, 450 ft. above the present sea-level and 1½ miles distant from the nearest beach, are the remains of a fortified enclosure. The refuse-heap of this encampment contains a large quantity of limpet-shells. Loch Spouts, in Ayrshire, is on high ground two or three miles from the sea. Dr. Munro has recorded that when the crannog in that swamp was explored, in the midden were found "large quantities of the shells of whelks, limpets, and hazel-nuts" ("Lake-dwellings of Europe," p. 420).

Prof. Geikie cited the discovery of a canoe near Perth as evidence that Neolithic man was in occupation when the sea washed the 50-ft. beach. I have been unable to find any detailed record of the finding of this canoe, and if, as Prof. Geikie says, it was made of pine, I should hold that to be incompatible with very high antiquity. Having taken part in the excavation of many crannogs, I have never seen any submerged timber, except oak and yew, that retained a firmer consistency than cheese.

Dr. Ritchie expresses the opinion that "there seems to be . . . no evidence, past or present, that the green woodpecker has been a native of Scotland." In Wallis's "History of Northumberland," 1769, vol. i., p. 319, it is stated that this species "has been observed in some of our vale-woods, but is not common. It was frequent in Dilston Park before the wood was cut down." Two instances of its occurrence in the valley of the Tweed are recorded in Mr. Evans's "Fauna of the Tweed Area," p. 109. Dr. Ritchie seems to be in error in attributing to Newton and Yarrell the use of the name "woodwall" as a generic term for all three British species of woodpecker. Yarrell strictly confines it to the green woodpecker, though he admits that Willughby and Ray use the term in a looser sense ("British Birds," third edition, vol. ii., p. 149), while Newton merely mentions it among the popular names for woodpeckers in general. The great and lesser spotted woodpeckers do not utter any song or bell-like note, and it seems fairly clear that it is the green woodpecker that figures in the ballad of Robin Hood (*cura* Ritson):

> The Woodwele sang and would not cease,
> Sitting upon a spray,
> So loud he wakened Robin Hood
> In the Greenwood where he lay.

It is probable that the green woodpecker, yaffle, or woodwale disappeared from Scotland with the forest that sheltered it.

THE REVIEWER.

Literature for Men of Letters and Science in Russia.

AT the beginning of this year an appeal was issued for funds to enable a certain number of scientific and literary publications to be sent to the House of Science and the House of Literature in Petersburg, where the remnant of the intellectual life of Russia is mostly congregated. The British Committee for Aiding Men of Letters and Science in that country has assured itself that such publications will reach their destination, and has made arrangements for their transmission. There are probably many authors who would be willing to send copies of their works in the form of excerpts or otherwise to Russian workers who have been cut off from the outside world since the revolution. The British Committee will be glad to receive any such books or papers of a non-political type and to send them to Petersburg. It cannot guarantee delivery to individuals, but it can ensure that publications will reach the Houses of Literature and Science. Parcels for transmission should be addressed to the above Committee, care of Messrs. Wm. Dawson and Sons, Ltd., Continental Department, Rolls Buildings, Fetter Lane, E.C.4.

L. F. SCHUSTER.

British Science Guild Offices, 6 John Street,
Adelphi, London, W.C.2, January 26.

The Mild Weather.

APROPOS of Mr. Charles Harding's letter (NATURE, January 20), one result of the extraordinary weather in the south of England since the third week of December was that on January 24 I saw forty or fifty plants in flower of the minute Crucifer (*Hutchinsia petraea*) on limestone screes close to Bristol. Some of the seedlings were 2 in. high, with five or six flowering heads and with seed-pods already developed. Last year a few were in flower on February 12, but even this is remarkably early, for March–April is the usual time in the district for this rare plant, and most of the books give March–May. On January 5 I saw a hazel in full blossom between Gunnersbury and Kew.

H STUART THOMPSON.

5 Westbourne Place, Clifton, January 30.

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